

ABSTRACT

The present invention provides an article with a silica-based film, wherein the film does not separate from a substrate after the Taber abrasion test prescribed in Japanese Industrial Standards (JIS) R 3212 although the thickness of the film formed by a sol-gel process exceeds 300 nm. This film can be formed by an improved sol-gel process, that is, a sol-gel process by using a coating solution wherein silicon alkoxide has a concentration of more than 3 mass% and less than 9 mass% in terms of a SiO₂ concentration, the molality of protons is 0.001 to 0.2 mol/kg, and the number of moles of the water is at least four times and at most ten times the total number of moles of the silicon atoms, and by heating a substrate at the temperature above 100°C.